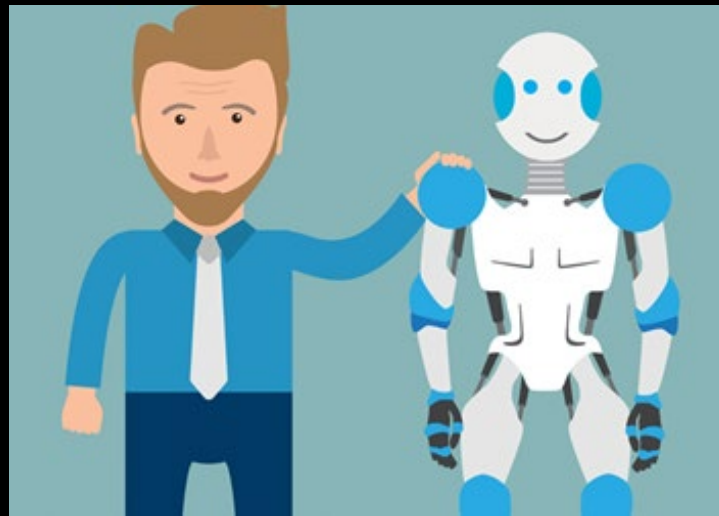



Designing Human-AI Partnerships to Combat Misinformation



ml@utexas.edu

 [@mattlease](https://twitter.com/mattlease)

Slides: slideshare.net/mattlease

Matt Lease

School of Information

University of Texas at Austin



Roadmap

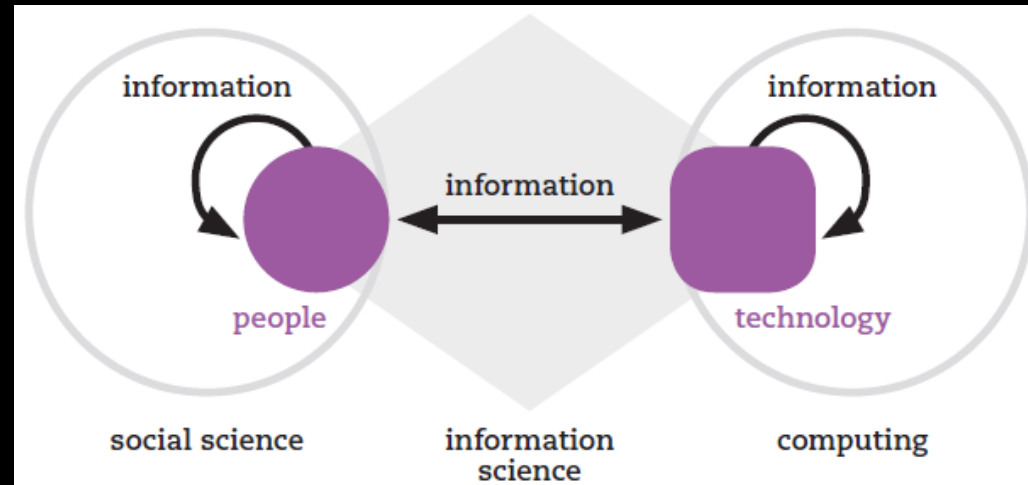


- **Background:** UT iSchool and *Good Systems*
- **Prototype:** A Human + AI Partnership for Misinformation
- **User Bias:** Detecting & Mitigating User Bias
- **Wrap-up Discussion**

What's an Information School?

“The place where people & technology meet”

~ Wobbrock et al., 2009

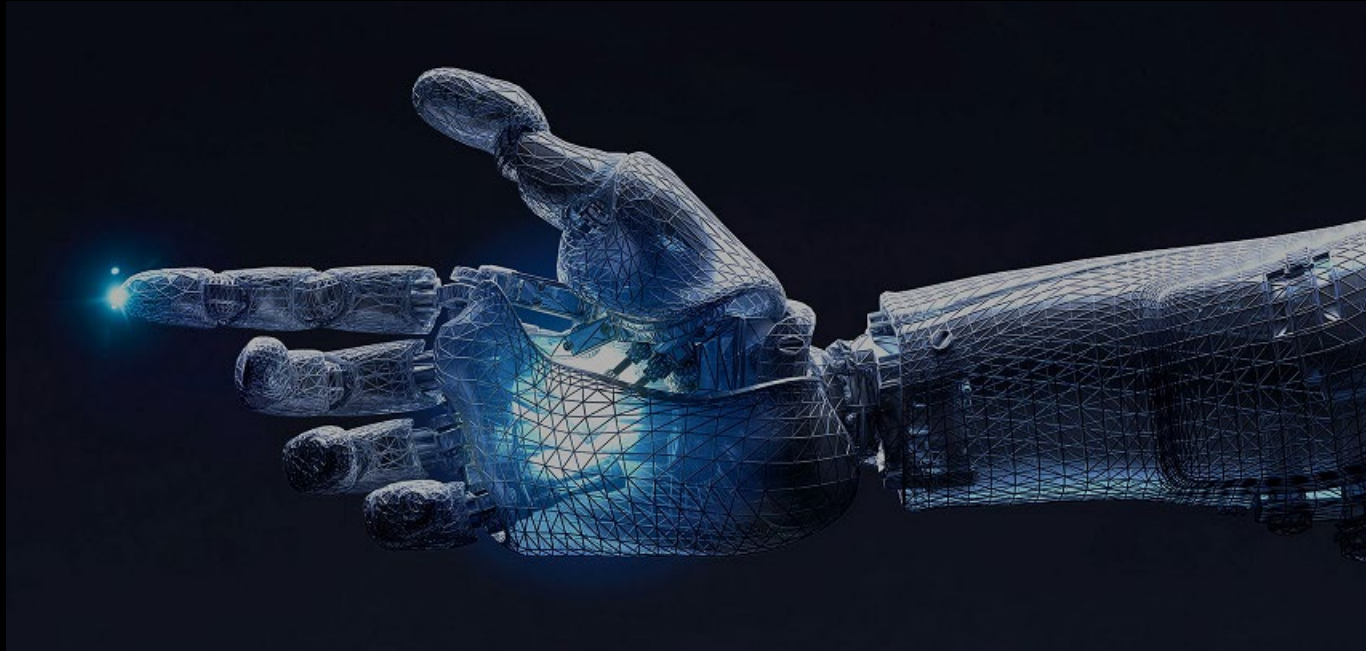


“iSchools” now exist at over 100 universities around the world



Good Systems: 8-Year UT “Moonshot” Project

Goal: design a future of Artificial Intelligence (AI) technologies to meet society’s needs and values.



<http://goodsystems.utexas.edu>

Matt Lease (University of Texas at Austin)



Misinformation: a long history

“Truthiness is tearing apart our country... It used to be, everyone was entitled to their own opinion, but not their own facts. But that’s not the case anymore.”

– Stephen Colbert (Jan. 25, 2006)



“You furnish the pictures and I’ll furnish the war.”

– William Randolph Hearst (Jan. 25, 1898)

Fact Checking by Journalists

Snoopes Search Keywords or URLs

What's New Hot 50 Fact Check News Video Archive Supp

Articles tagged: Fake News 304 Total

News > Technology

Media Firm "Providr" Allegedly Owes Money to Several Angry Facebook Publishers

17 July 2018 - The company gained prominence by asserting they were compliant with Facebook's rules at a time when few other firms were. They were not, and now their former clients feel duped.

Junk News

Did Congresswoman Ateesha Nubbins Put an Upper-Age Limit on Voting?

10 July 2018 - A meme created by a satirical Facebook page convinced some viewers that a fictional congresswoman was attempting to pass a non-existent law.

Disney

Did Disney Announce It Was to Open a Theme Park in Escanaba, Michigan?

[illegible]

Design Challenges for AI Fact Checking

Fair, Accountable, & Transparent (“FAT”) AI



Design Challenges for AI Fact Checking

Fair, Accountable, & Transparent (“FAT”) AI

- Is “fact” vs. “fake” all people want to know?



Design Challenges for AI Fact Checking

Fair, Accountable, & Transparent (“FAT”) AI

- Is “fact” vs. “fake” all people want to know?
- Why trust a “black box” classifier?



Design Challenges for AI Fact Checking

Fair, Accountable, & Transparent (“FAT”) AI



- Is “fact” vs. “fake” all people want to know?
- Why trust a “black box” classifier?
- How to detect & mitigate bias (user or AI)?

Design Challenges for AI Fact Checking

Fair, Accountable, & Transparent (“FAT”) AI



- Is “fact” vs. “fake” all people want to know?
- Why trust a “black box” classifier?
- How to detect & mitigate bias (user or AI)?
- How can we combine human knowledge & experience with AI speed & scalability?

Design Challenge: Human Interaction with AI?

2017 ACM SIGCHI Conference on Human Factors in Computing Systems

UX Design Innovation: Challenges for Working with Machine Learning as a Design Material

Graham Dove, Kim Halskov

CAVI, Aarhus University

Aarhus, Denmark

graham.dove@cc.au.dk, halskov@cavi.au.dk

Jodi Forlizzi, John Zimmerman

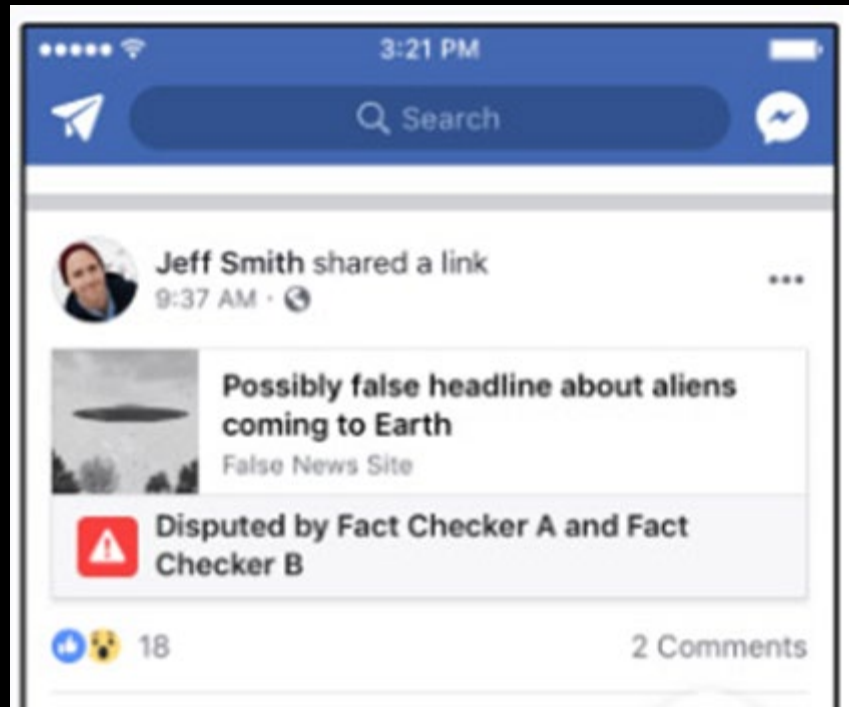
HCII, Carnegie Mellon University

Pittsburgh PA, USA

forlizzi@cs.cmu.edu, johnz@cs.cmu.edu

Brief Case Study: Facebook

(simpler case: journalist fact-checking)



TECHNOLOGY

Is There Any Hope for Facebook's Fact-Checking Efforts?

Research is making clear just how hard it is to stop people from believing false stories on social media.

The Atlantic

JON CHRISTIAN SEP 19, 2017



Tessa Lyons, a Facebook News Feed product manager:
“...putting a strong image, like a red flag, next to an article may actually entrench deeply held beliefs — the opposite effect to what we intended.”

Designing for User Interaction

“A few classes in ‘use and users of information’ ... could have helped social media platforms avoid the common pitfalls of the backfire effect in their *fake news* efforts...”

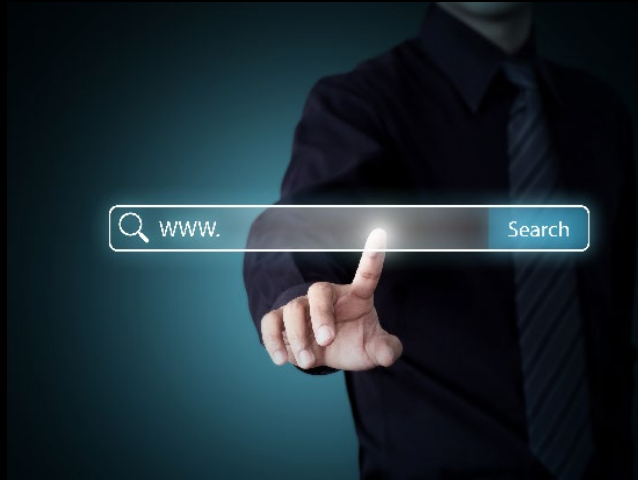
<https://www.forbes.com/sites/kalevleetaru/>

Monday, August 5, 2019

Forbes

Believe it or not: Designing a Human-AI Partnership for Mixed-Initiative Fact-Checking

Joint work with
An Thanh Nguyen (UT), Byron Wallace (Northeastern), & more!





Nguyen et al., UIST'18

Claim Checker

Enter a Claim

Check ClaimTry A Random Claim

Example Claims:

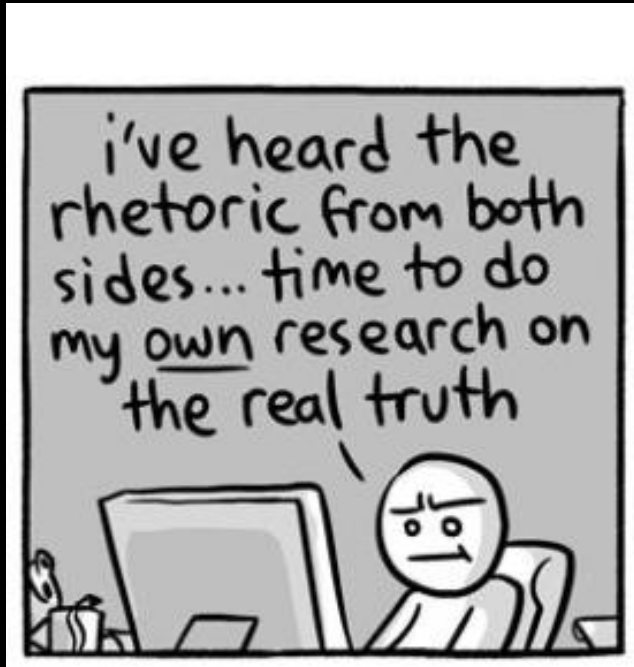
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ISIS fighters were caught trying to enter the U.S. via the U.S.-Mexico border

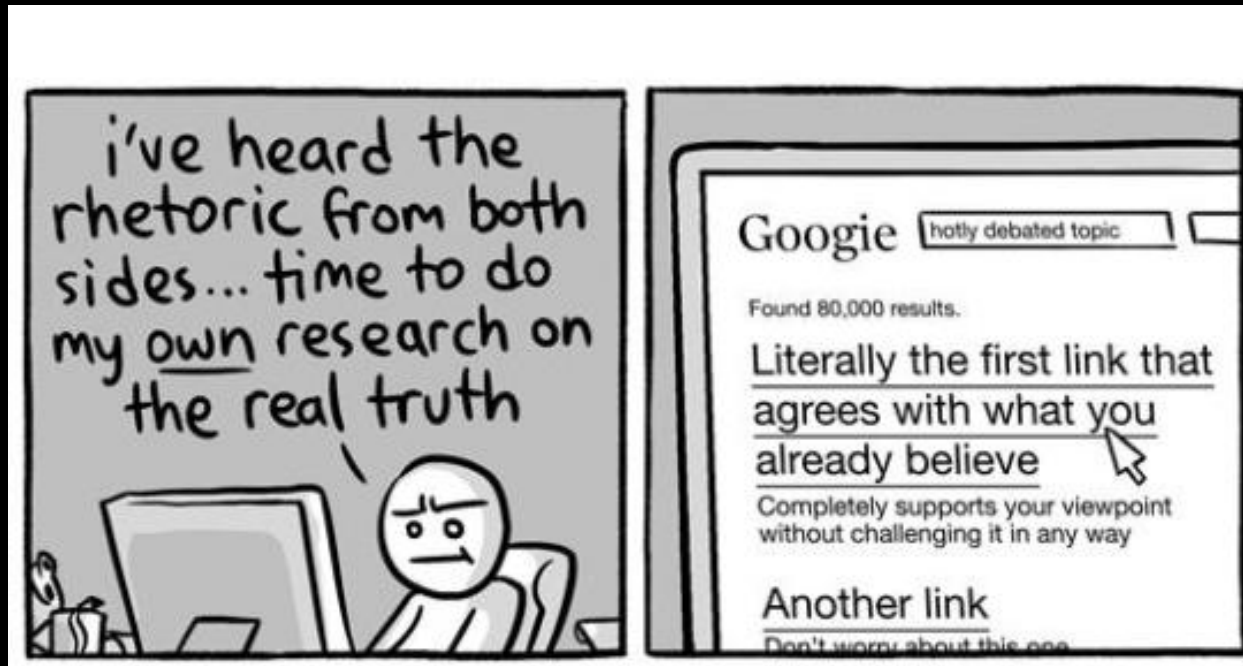
A N.Y. high schooler earned 72 million in the stock market

Demo!

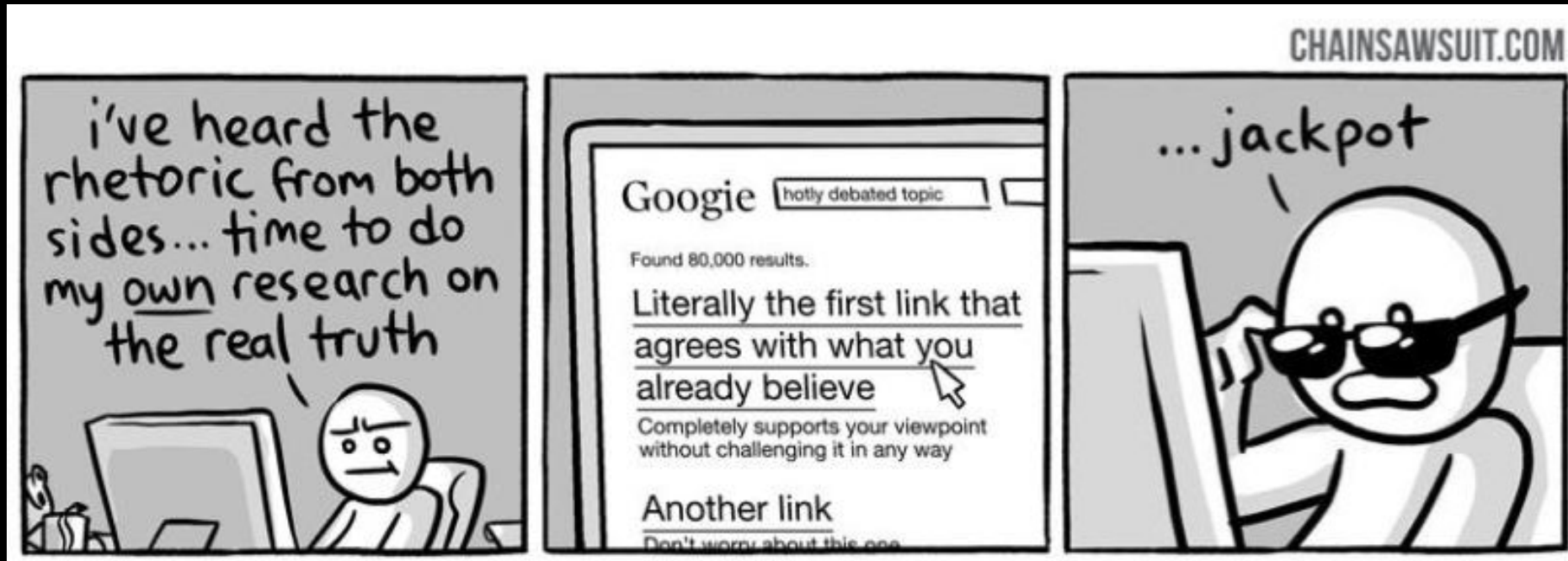
Empowering Users: Vision



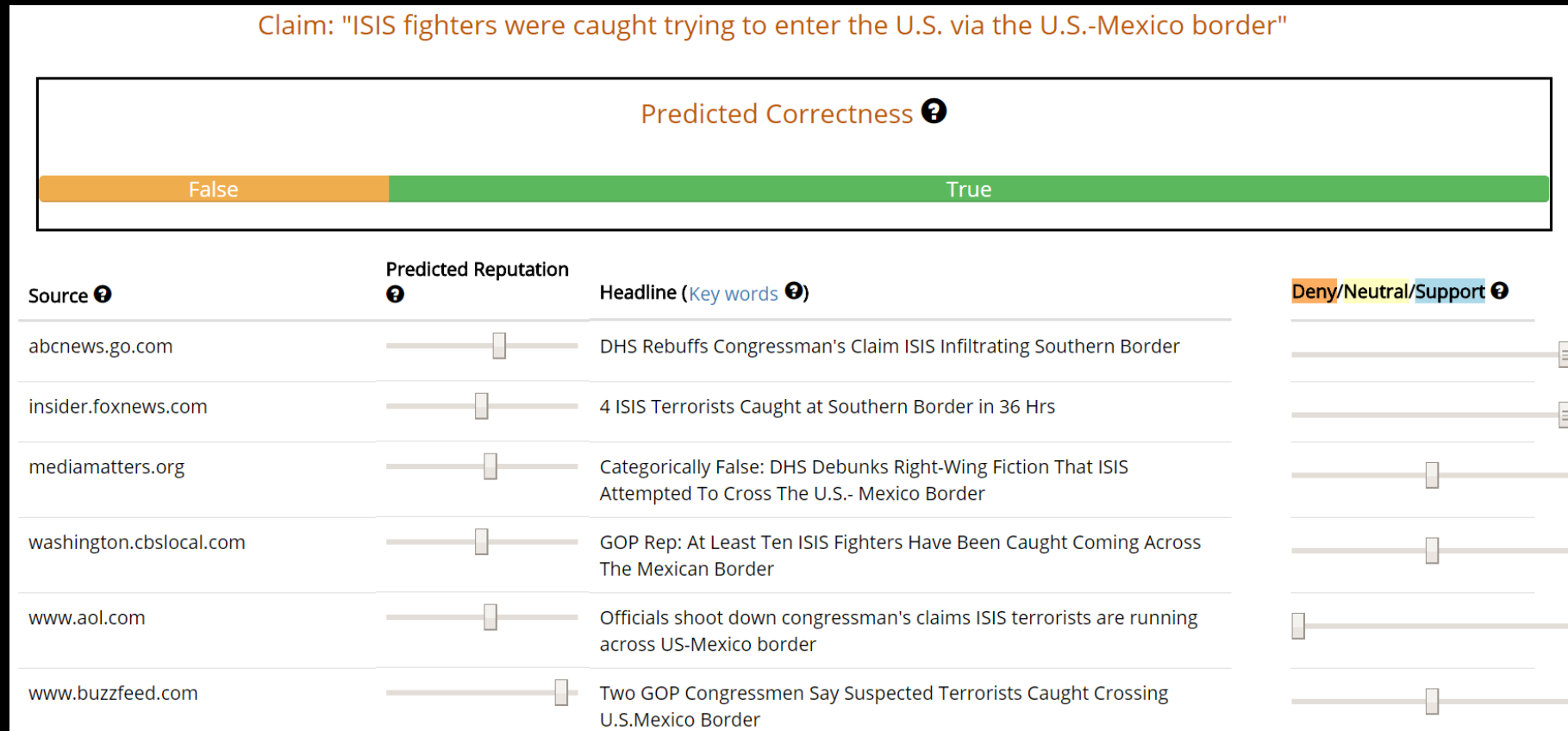
Empowering Users: Challenge



Empowering Users: Challenge



A new form of echo chamber?



User control promotes transparency & trust, but what about bias?

CobWeb: A Research Prototype for Exploring User Bias in Political Fact-Checking

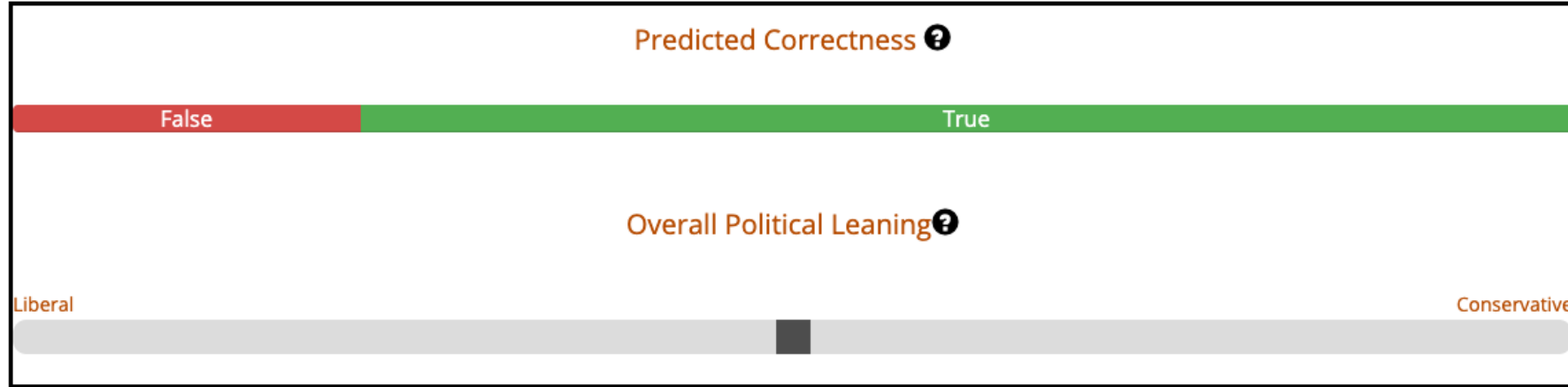


Anubrata Das, Kunjan Mehta and Matthew Lease

SIGIR 2019 Workshop on Fair, Accountable, Confidential, Transparent, and Safe Information Retrieval (FACTS-IR). July 25, 2019

Claim: "Some Story your Friend told you about"

(Click or hover over ? for help)



We introduce
“political leaning” (bias)
as a function of the
adjusted reputation of
the news sources

Sources

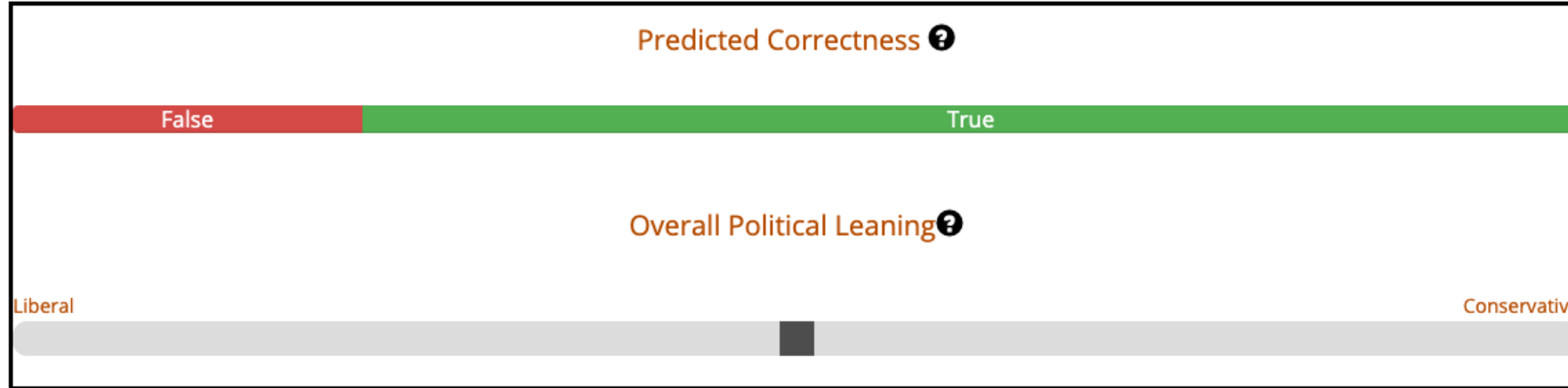
Source Information ?

News Source ?	Source Political Leaning ?	Source Reputation ?	Deny/Neutral/Support ?
abc.com	<div> <div>Liberal</div> <div>Conservative</div> </div>	<div> <div></div> <div></div> </div>	<div> <div></div> <div></div> </div>
lion.com	<div> <div>Liberal</div> <div>Conservative</div> </div>	<div> <div></div> <div></div> </div>	<div> <div></div> <div></div> </div>
xyz.com	<div> <div>Liberal</div> <div>Conservative</div> </div>	<div> <div></div> <div></div> </div>	<div> <div></div> <div></div> </div>
politexas.com	<div> <div>Liberal</div> <div>Conservative</div> </div>	<div> <div></div> <div></div> </div>	<div> <div></div> <div></div> </div>
usp.com	<div> <div>Liberal</div> <div>Conservative</div> </div>	<div> <div></div> <div></div> </div>	<div> <div></div> <div></div> </div>

Stance

Claim: "Some Story your Friend told you about"

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Source Information ?

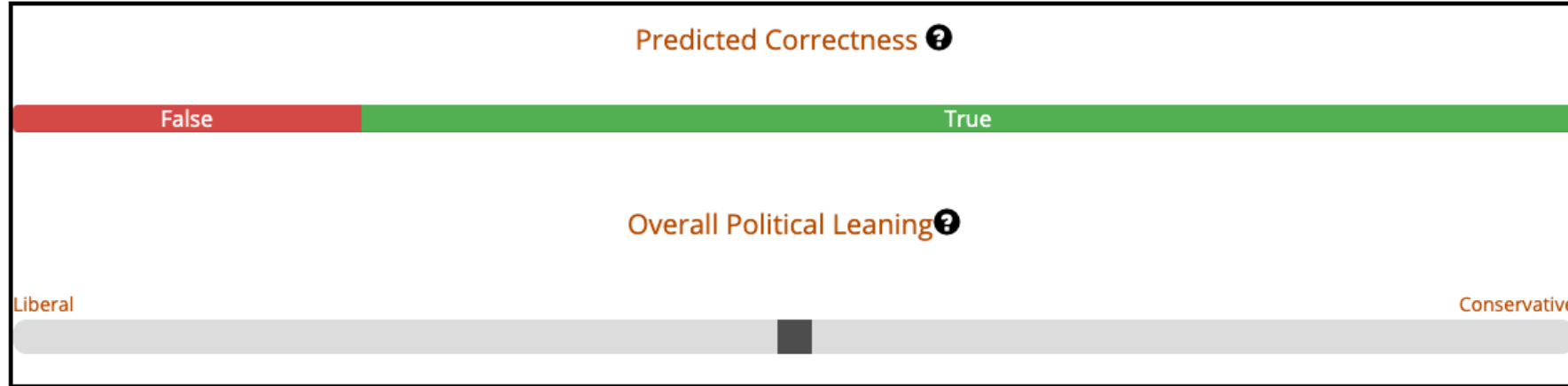
News Source ?	Source Political Leaning ?	Source Reputation ?	Deny/Neutral/Support ?
abc.com	Liberal Conservative		
lion.com	Liberal Conservative		
xyz.com	Liberal Conservative		
politexas.com	Liberal Conservative		
usp.com	Lib 		

Imaginary
Source Bias

Stance

Claim: "Some Story your Friend told you about"

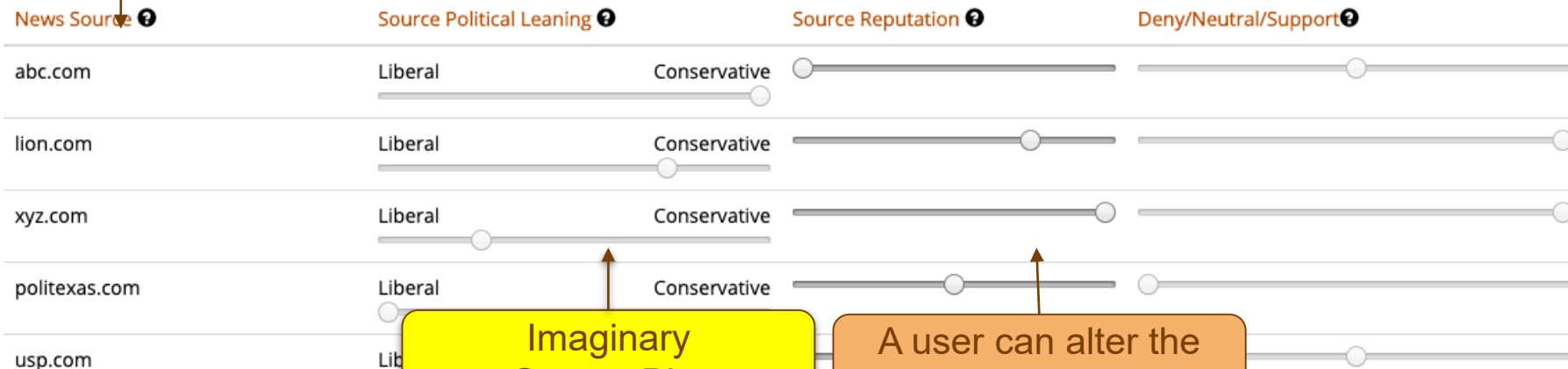
(Click or hover over ? for help)



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Imaginary
Source Bias

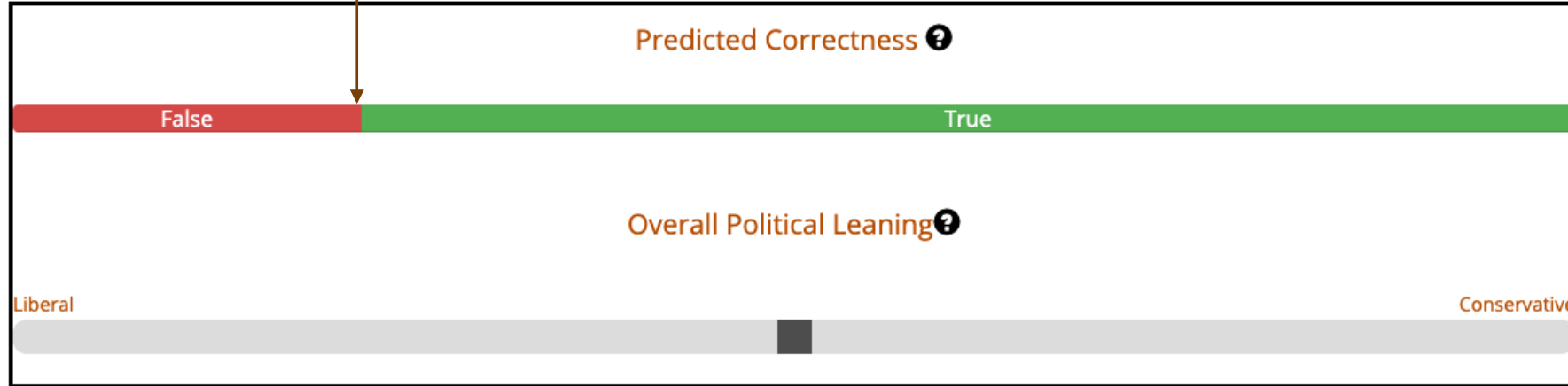
A user can alter the
source reputation

Stance

Changing reputation scores changes the predicted correctness

Some Story your Friend told you about"

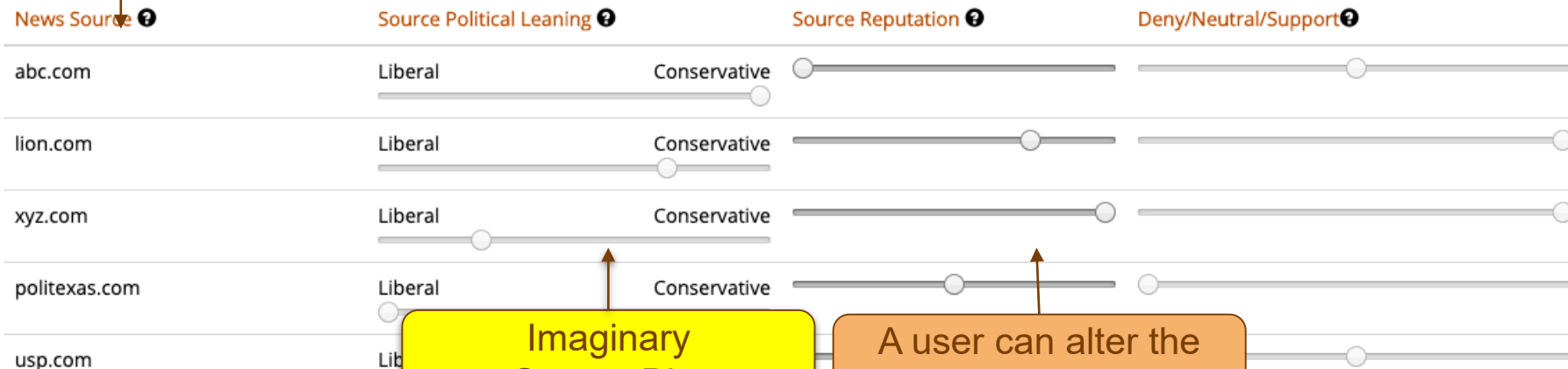
(Click or hover over ? for help)



We introduce “political leaning” (bias) as a function of the *adjusted* reputation of the news sources

Sources

Source Information ?



Imaginary Source Bias

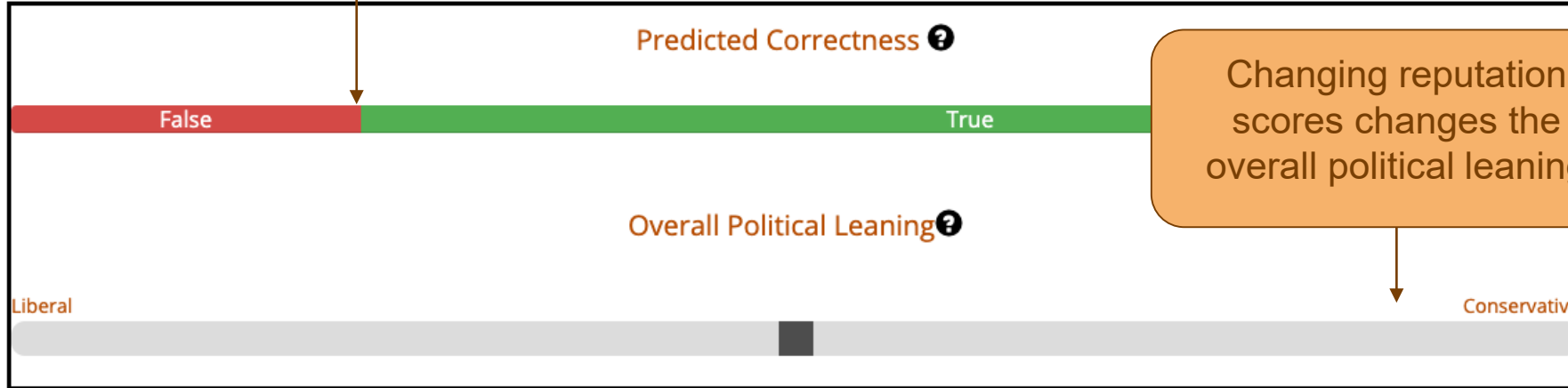
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(Click or hover over ? for help)

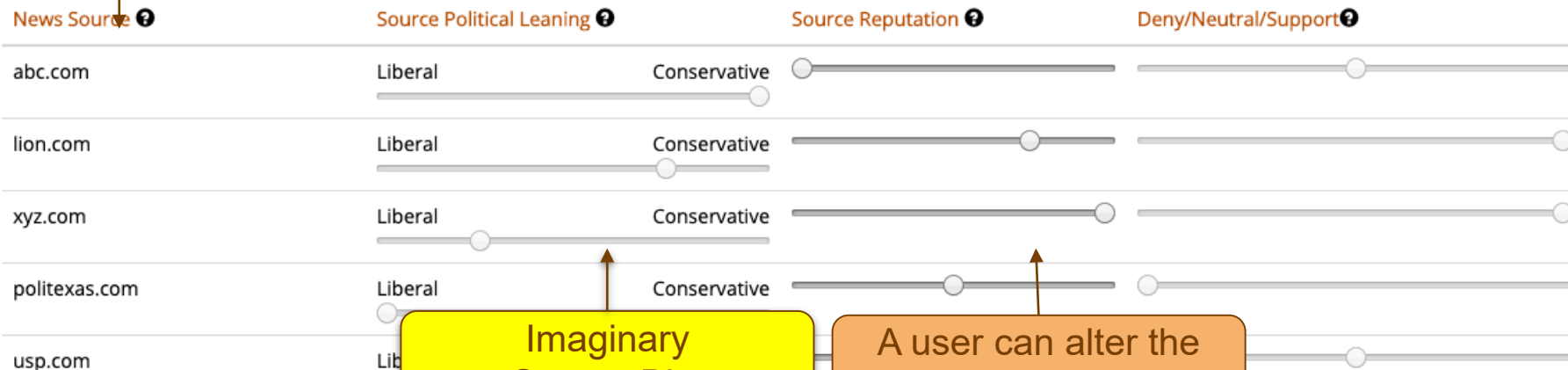


Changing reputation scores changes the overall political leaning

We introduce “political leaning” (bias) as a function of the *adjusted* reputation of the news sources

Sources

Source Information ?



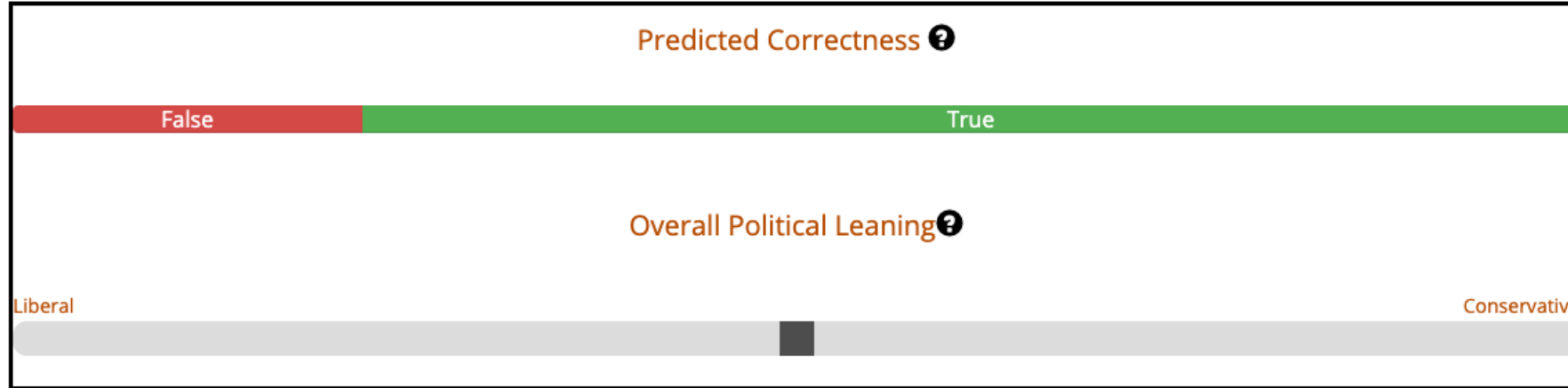
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Source Information ?

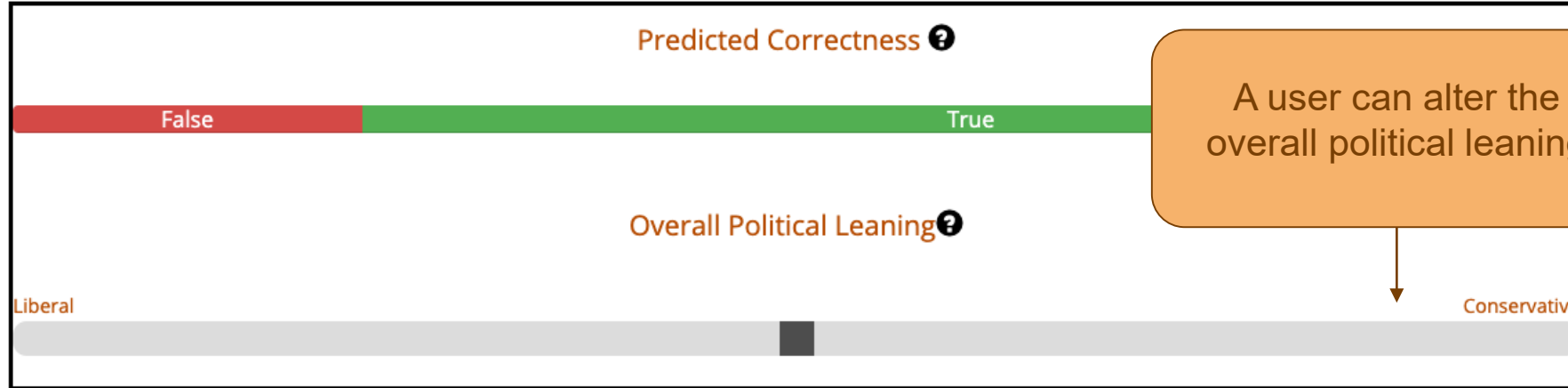
News Source ?	Source Political Leaning ?	Source Reputation ?	Deny/Neutral/Support ?
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politexas.com	Liberal Conservative		
usp.com	Lib		

Imaginary
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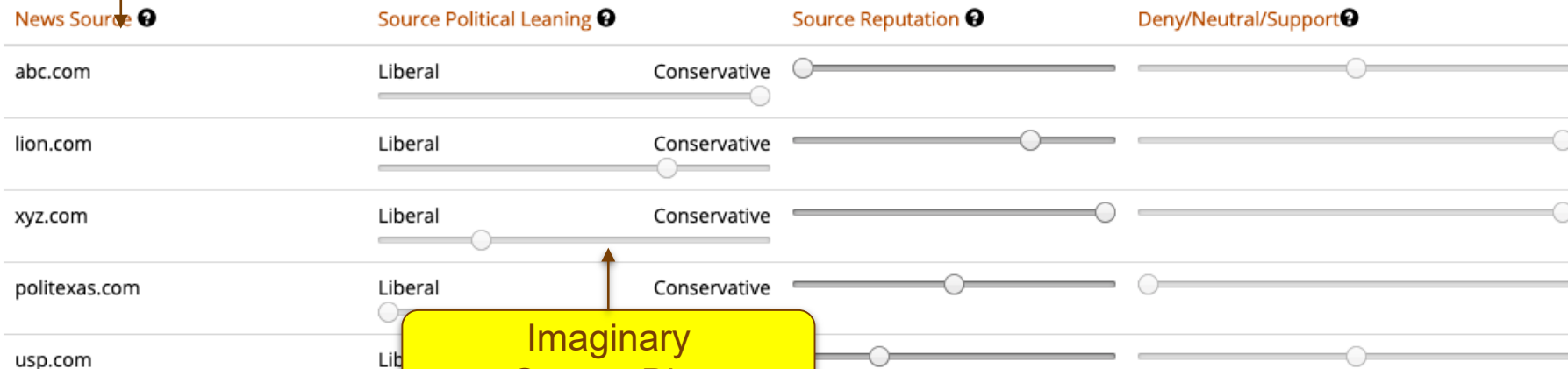
(Click or hover over ? for help)



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Source Information ?

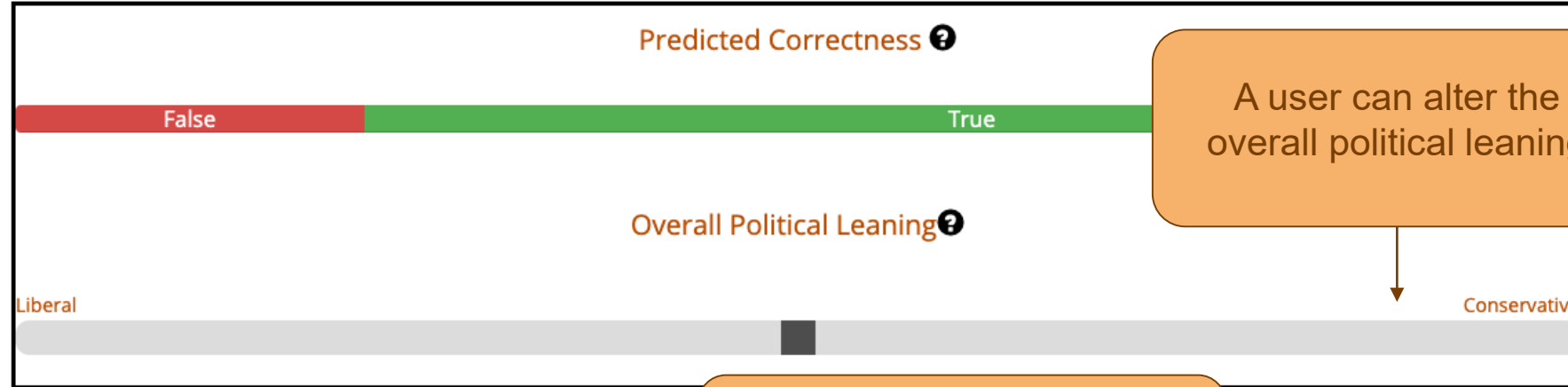


Imaginary
Source Bias

Stance

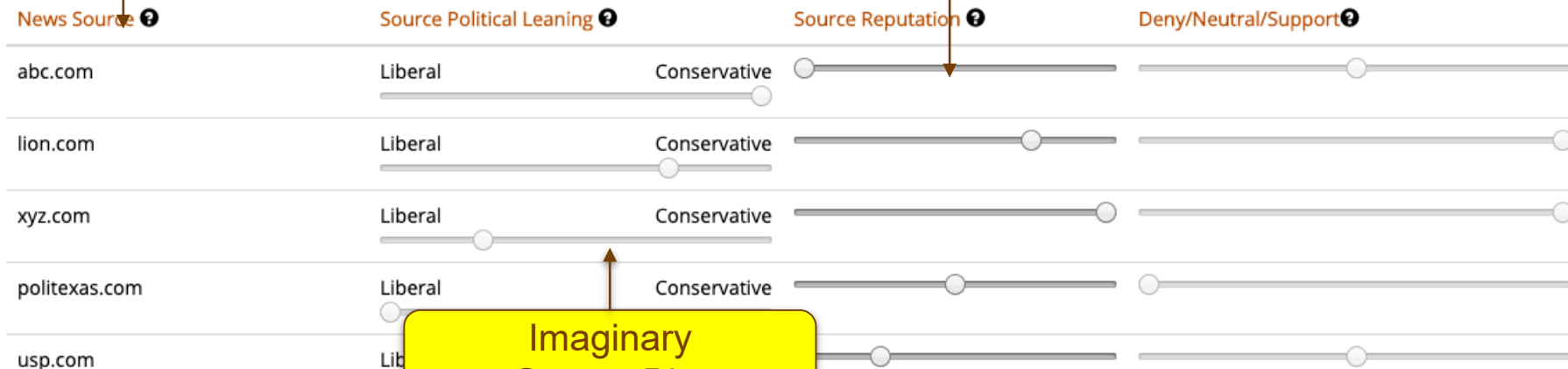
Claim: "Some Story your Friend told you about"

(Click or hover over ? for help)



We introduce "political leaning" (bias) as a function of the *adjusted* reputation of the news sources

Sources



Changing the overall political leaning changes the source reputations

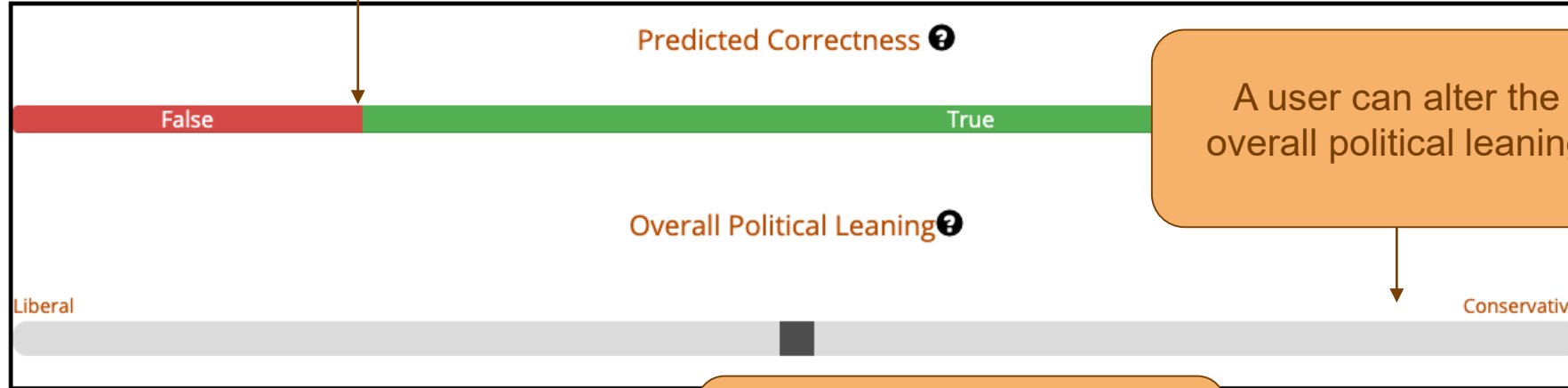
Imaginary Source Bias

Stance

Changing the overall political leaning changes the predicted correctness

Some Story your Friend told you about"

(Click or hover over ? for help)

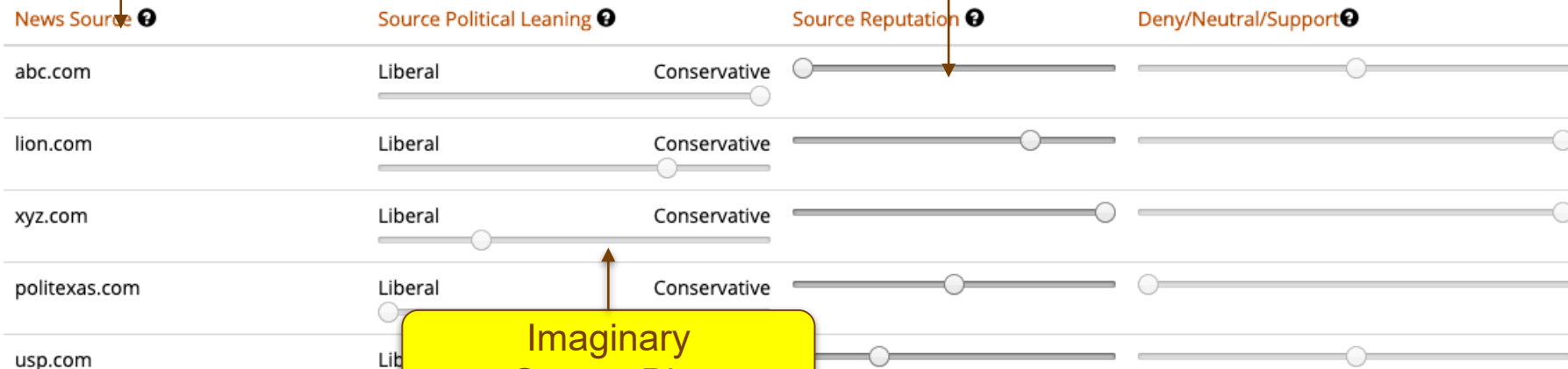


A user can alter the overall political leaning

We introduce “political leaning” (bias) as a function of the *adjusted* reputation of the news sources

Sources

Changing the overall political leaning changes the source reputations



Imaginary Source Bias

Stance

Wrap-up Discussion

- **Black-box AI is not enough!** Want interaction, exploration, & trust.
 - Useful problem to ground work on **Fair, Accountable, & Transparent (FAT) AI**
- **Design challenge:** human + AI partnership
- **Search engines need more than fact-checking**
 - How to diversify search results for controversial topics?
 - How to assess potential harm? (eg, vaccination & autism)
- **AI: new risks of harm as well as potential for good**
 - Potential added confusion, data / algorithmic bias
 - Potential for personal “echo chamber”
 - Adversarial applications



Thank You!



Lab: ir.ischool.utexas.edu

 @mattlease

Slides: slideshare.net/mattlease



Matt Lease (University of Texas at Austin) – ml@utexas.edu

UIST 2018

Claim Checker

Enter a Claim

Check ClaimTry A Random Claim

Example Claims:

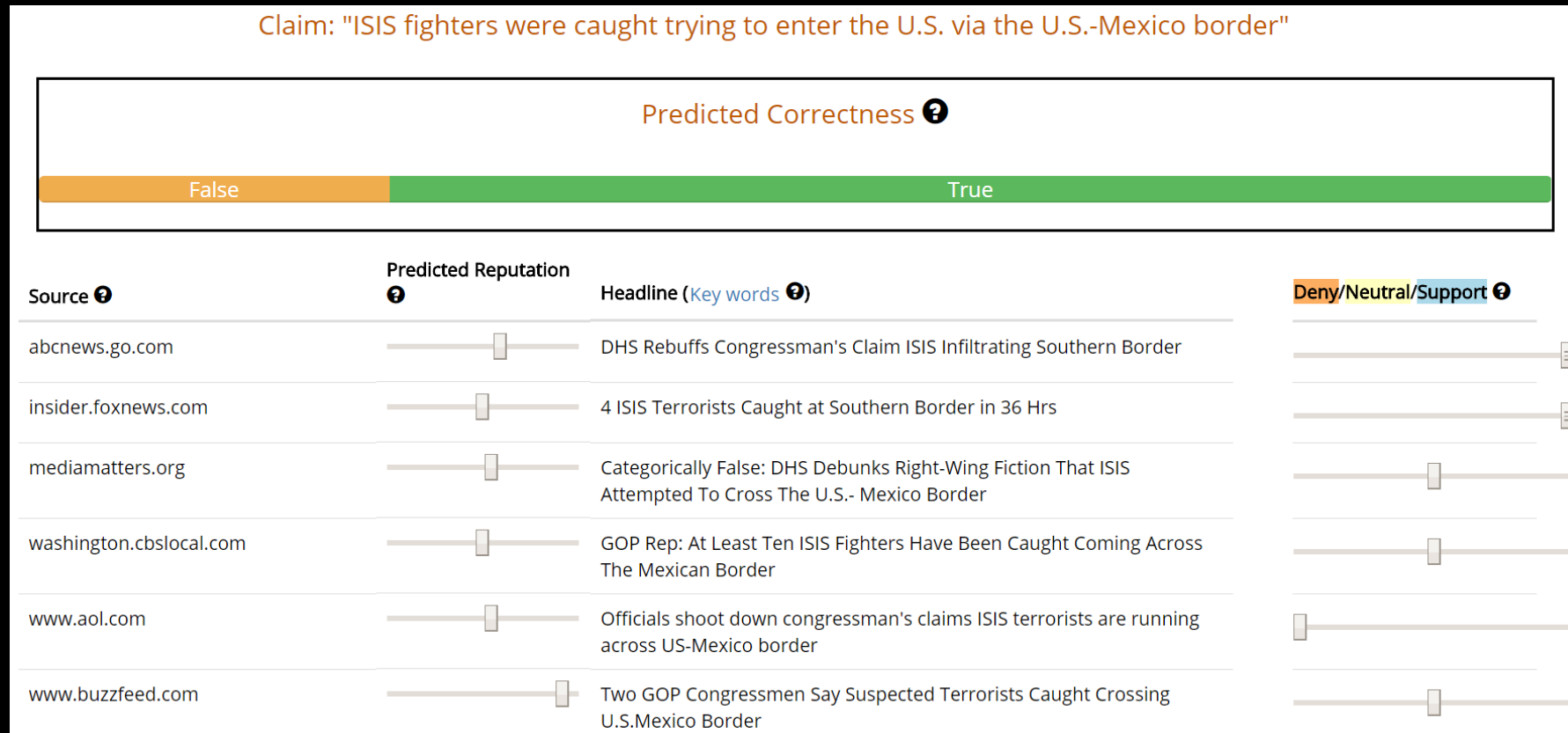
Vice Media CEO Shane Smith paid 300,000 for a Las Vegas dinner

ISIS fighters were caught trying to enter the U.S. via the U.S.-Mexico border

A N.Y. high schooler earned 72 million in the stock market

<http://fcweb.pythonanywhere.com>

Primary Interface (Demo Backup slide)



Source Reputation (Demo Backup slide)

Predicted Reputation of www.bloomberg.com			
<div> <div>Wrong</div> <div>Unknown</div> <div>Correct</div> </div>			
Claim	Article ?	Article Stance on Claim ?	Veracity of Claim ?
The U.S. killed Ahmed Abdi Godane in an airstrike	Al-Shabaab Terror Group Leader Killed in U.S. Airstrike	for	true
New York Police will start issuing tickets, rather than make arrests, for small amounts of marijuana	New York Plans to Reduce Marijuana Arrests Using Tickets	for	true
Tesla is building its gigfactory in Nevada	Tesla Said to Select Nevada for Its First Battery Site	observing	true
Apple delayed production of a 12-inch iPad Pro and will not announce it at the March 9th event	Apple to Delay Production of Larger iPads	for	true
Google will purchase roughly half of Pacific Shores office park	Google Said to Buy Redwood City Offices for 585 Million	observing	true
The Nigerian government and Boko Haram have reached a ceasefire agreement	Nigerian Claims of Boko Haram Cease-Fire Hurt by Violence	observing	false
Vice Media CEO Shane Smith paid 300,000 for a Las Vegas dinner	Vice CEO Smith Spent 300,000 on Vegas Feast After Blackjack	for	unknown